



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/588,396

04/10/2007

Noriya Hayashi

MTU.0021US

8377

21906 7590 10/01/2008
TROP PRUNER & HU, PC
1616 S. VOSS ROAD, SUITE 750
HOUSTON, TX 77057-2631

EXAMINER

PAK, HANNAH J

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

10/01/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/588,396	Applicant(s) HAYASHI, NORIYA	
	Examiner Hannah Pak	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08/03/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/03/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Double Patenting I

1. Claims 1, 5-7, and 14-19 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 6-11 of copending Application No. 10/588,331 (filed on 08/03/2006), hereinafter referred to as “U.S. Appl. '331” (US 2008-0039566) in view of Hayashi (JP 2003-066189). Although the conflicting claims are not identical, they are not patentably distinct from each other.

Both the instant application and the U.S. Appl. '331 claim a neutron shielding material composition comprising a hydrogenated epoxy compound, a density increasing agent, boron compound, filler, and refractory material having at least one of magnesium

Art Unit: 1796

hydroxide and aluminum hydroxide. Both the instant application and the U.S. Appl. '396 also claim using the neutron shielding material to produce a neutron shielding container (Compare claims 18 and 19 of the instant application with claims 10-11 of the U.S. Appl. '331). Moreover, the hydrogenated epoxy resin of claim 5, Formulae 2 and 3 and claim 6, Formula 14 in the instant application includes the hydrogenated epoxy resin claim 2, Formula 1 and claim 3, Formula 6 in the U.S. Appl. '331, respectively.

However, the U.S. Appl. '331 does not specify the polymerization initiator and the polymerization component as required by claim 1 of the instant application. Hayashi teach employing a polymerization initiator and polymerization component in a neutron shield material composition to provide heat resistivity even under a high temperature environment and improved neutron shield capability (see English translated abstract). Therefore, one of ordinary skill in the art would have recognized the neutron shielding material composition claimed in the current and co-pending applications are obvious variations of one another.

This is a provisional obviousness-type double patenting rejection.

Double Patenting II

2. Claims 1 and 15-17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 7-8 and 10 of U.S. Patent No. 7,327,821 in view of Hayashi (JP 2003-066189).

Both the instant application and the patent claim a neutron shield composition comprising neutron shielding material, curing agent, refractory material containing magnesium hydroxide, and a hydrogenated bisphenol epoxy resin.

Although both the application and patent claim a density increasing agent, the ranges for the agents are overlapping with one another (Compare claim 17 of the instant application and claim 10 of the patent). However, the range recited in claim 10 of the patent encompasses that of claim 17 of the current application. Moreover, the current application does not specify the polymerization initiator and the polymerization component as required by claim 1 of the instant application. Hayashi teach employing a polymerization initiator and polymerization component in a neutron shield material composition to provide heat resistivity even under a high temperature environment and improved neutron shield capability (see English translated abstract). Accordingly, one of ordinary skill in the art would have recognized the neutron shield composition claimed in the current application and the patent is obvious variations of one another.

3. Claims 1 and 15-17 directed to an invention not patentably distinct from claims 1-4, 7-8 and 10 of commonly assigned U.S. Patent No. 7,327,821. Specifically, please refer to the discussion in paragraph 2 above.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned U.S. Patent 7,327,821, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can,

Art Unit: 1796

under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

Claim Rejections - 35 USC § 103

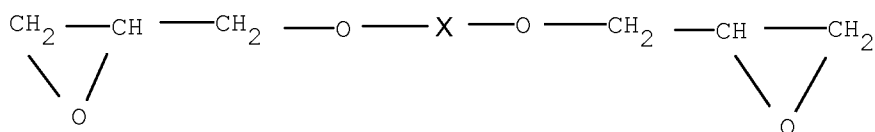
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

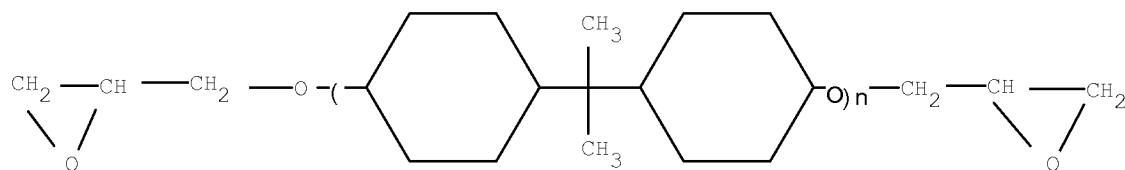
4. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi (Machine Translation of JP 2003-066189) in view of Anayama et al. (EP 0 628 968).

With respect to claims 1-4 and 18-19, Hayashi et al. disclose a neutron shielding material composition useful for cask and container applications, comprising a polymerization initiator, a polymerization component having a hydrogenated epoxy component, and a boron compound (Paragraphs 1 and 9). The neutron shielding material composition does not comprise a hardening (curing) agent (Paragraph 9).

Hayashi et al. further disclose the epoxy component comprising a compound having the structural formula (Compare Formula 11 of Paragraph 9 with the structural formula 1 recited in claim 5):

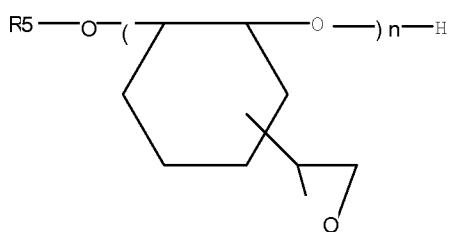


wherein X is at least one of the compounds selected from Formula 12 of Paragraph 9, which correspond to the claimed compounds of structural formulas 2-6 recited in claim 5. The epoxy component also contains another compound with the structural formula:



wherein n is from 1 to 4 (Compare Formula 13 of Paragraph 9 with formula 14 recited in claim 6). The epoxy component also contains other compounds with the structural formula including (a-d):

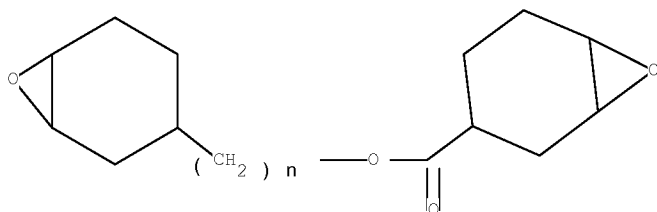
a)



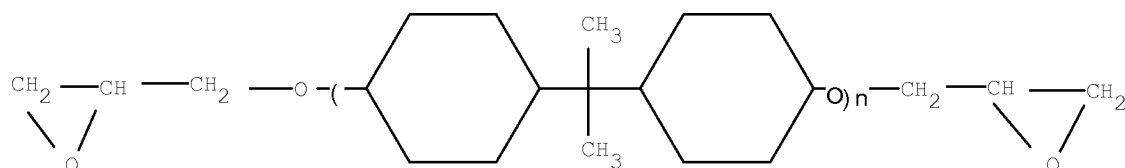
wherein R9 is an alkyl group of 1-10 carbons or H and n is from 1 to 24 (Compare Formula 14 of Paragraph 9 with formula 7 recited in claim 7).

b)

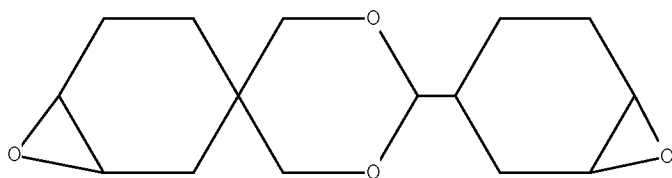
Art Unit: 1796



wherein n is from 1 to 8 (Compare Formula 15 of Paragraph 9 with formula 8 recited in claim 7).

c)

wherein n is from 1 to 3 (Compare Formula 16 of Paragraph 9 with formula 15 recited in claim 7).

d)

(Compare Formula 17 of Paragraph 9 with formula 17 recited in claim 7).

As to claims 8-13, Hayashi et al. disclose the neutron shielding composition containing a compound of increasing the hydrogen content containing at least one of the compounds selected from Formula 18 of Paragraph 9, which correspond to the structural formulas 9 and 10 recited in claim 9. Moreover, Hayashi et al. disclose the composition comprising an oxetane compound as the polymerization component having at least one of the compounds selected from Formula 19 of Paragraph 9, which

Art Unit: 1796

correspond to the structural formulas 19 and 20 recited in claim 11. The neutron shielding composition also contains a cationic polymerization initiator having at least one of the compounds selected from Formula 20, which correspond to the formulas 11 and 16 recited in claim 13.

In addition, Hayashi et al. teach employing fillers and refractory materials having at least one of magnesium hydroxide and aluminum hydroxide as required by claims 14-16 (Paragraphs 36-37).

Hayashi does not specifically mention employing density-increasing agents as required by claims 1 and 17.

However, Anayama et al. also disclose employing high density inorganic materials, corresponding to the claimed density-increasing agent, comprising metal powders, such as W, Mn, Fe, and Mn, in a neutron shielding material composition to obtain a higher and more effective shielding effect on neutron rays (Page 3, lines 5-39). Anayama et al. further disclose that the high density inorganic materials will also produce shielding materials having optimum properties, such as greater mechanical strength and heat resistance (Page 10, lines 1-12).

Given the above teachings, it would have been obvious to one of ordinary skill in the art to employ the density-increasing agents taught by Anayama et al. in a neutron shielding composition of Hayashi et al. to obtain optimum shielding materials.

As to claim 9, Hayashi and Anayama et al. do not mention the specific density of the density-increasing agent. However, Anayama et al. disclose the high density inorganic material (corresponding to the claimed density-increasing agent) having metal

Art Unit: 1796

powders with a density of at least 2.0 g/cm^3 or above, which overlaps with the claimed range ($5.0 - 22.5 \text{ g/cm}^3$) (Page 3, lines 15-21). Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the invention was made, since it has been held that choosing the overlapping portion of the range taught by Anayama et al., and the range claimed by the applicant, has been held to be a *prima facie* case of obviousness, see *MPEP* § 2144.05: *Overlapping Ranges*.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hannah Pak whose telephone number is (571) 270-5456. The examiner can normally be reached on Monday - alternating Fridays (7:30 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HP/

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796